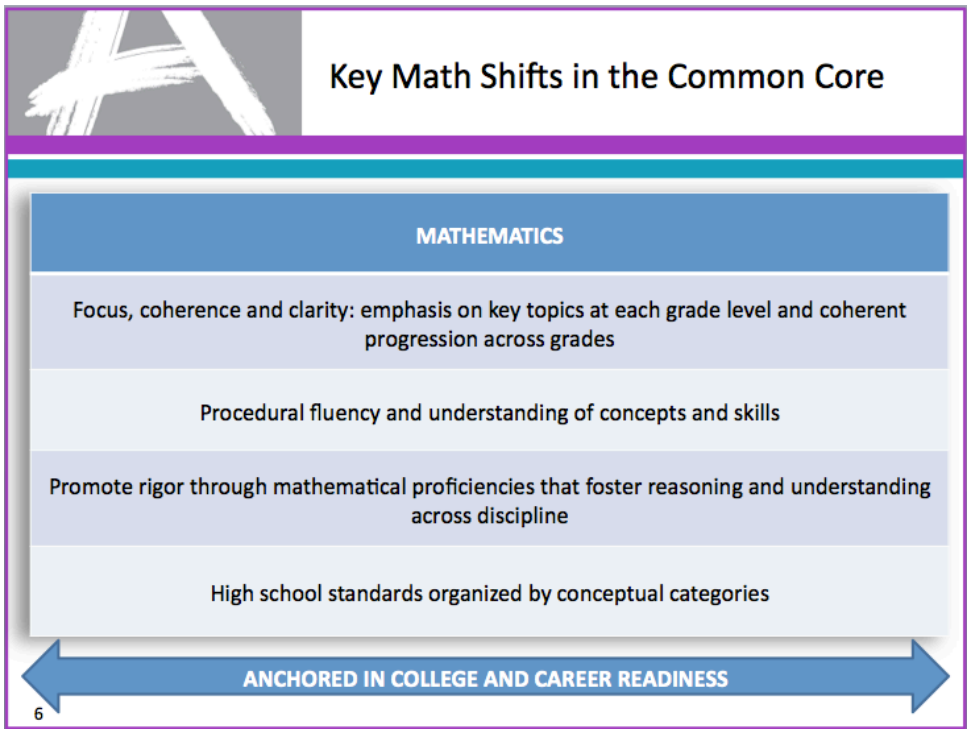
K-8 MATH PROGRAM

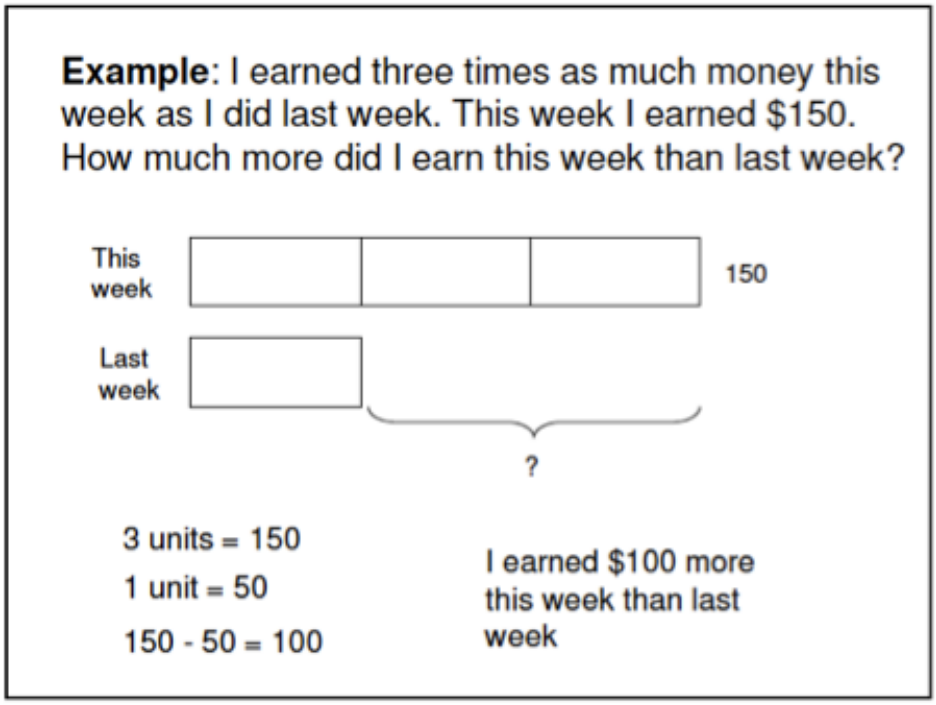
In 2011, Massachusetts adopted new ELA and Math frameworks that align to the Common Core standards. These standards are now being implemented across most of the country. The focus is on preparing students to be "career and college ready" and attempting to ensure that students entering college have the necessary knowledge base to avoid needing remedial college work and are well positioned to take on advanced mathematical study.



There is a significant misalignment between the key math shifts in the Common Core and the current core math materials used in Shrewsbury (K-8).

The Shrewsbury Public School district is in the beginning stages of aligning its math curriculum to these new standards. This summer a group of pilot teachers, representing grades K-8, met with math consultants for a week to delve deeply into the standards and to understand exactly what is being asked of students in terms of their mathematical learning at each grade level, and to understand the progression from one grade level to the next. The math department chair from the high school also participated in some of the conversations to attend to the transition issues between the middle and high school levels. These new frameworks focus on addressing a few standards well at each grade level, so this new curriculum will have less breadth and greater depth. There is also a substantial focus on ensuring that

students develop mathematical "habits of mind" including "making sense of problems and persevering in solving them", "constructing viable arguments and critiquing the reasoning of others", "modeling of mathematics", and "using appropriate tools strategically."



An example of "modeling of mathematics"

This past summer our pilot teachers began the intensive work of mapping grade level curriculum that aligns to these new standards. Once pilot teachers began working with the new content in their classrooms, it became clear that our current math materials could not provide appropriate resources to teach the revised standards. After reviewing available common core aligned math materials, our pilot group determined that Focus in Math (Grades K-5) and CMP3 (6-8) were the best available resources to bring into classrooms to support the revised instructional goals.

There is a sense of urgency to this work as Shrewsbury students are already being assessed on the revised standards on MCAS. Given this, implementation of the new standards is slated to begin next year in all K-8 classrooms. To be sure that all of our 127 K-8 math classroom teachers have the necessary materials and related training on the new standards there is a significant increase in the curriculum budget for FY 15. The anticipated costs of materials and professional development for this cohort of educators is $722,000. It is a strong rec-

ommendation that the increase in instruction coach roles and the restitution of the math curriculum coordinator role at the middle level be considered be an integral part of this initiative.

Cost Breakdown:
Purchase of Focus in Math for all K-5 Classrooms: $500,000
Purchase of CMP3 for all 6-8 Classrooms: $182,000
Funding for early adopter teachers to plan and deliver training during the 2014-15 school year: $40,000

Total Cost: $722,000

CURRICULUM COORDINATION AND COACHING

Dr. Robert Marzano, a highly regarded education researcher, completed a 35 year meta-analysis of the most important school level factors impacting student achievement. His findings were published in a book entitled What Works in Schools (2003). This often quoted resource identifies a "Guaranteed and Viable Curriculum" as the top factor impacting student achievement (Marzano, 2003).

3 Levels of a "Guaranteed and Viable Curriculum"

When a district works to secure a guaranteed and viable curriculum for its students it needs to pay attention to the three different components of this goal:

Intended Curriculum

This aspect involves clearly articulating the specific, focused content to be taught and the structures that will be used to teach it. The work focuses on curriculum planning sessions followed by a cycle of implement, reflect, and revise. Collaborating with teachers to prioritize standards and designing instructional experiences is the primary work of curriculum coordinators. To give a sense of the challenge of this work, researchers at Mid-continent Research for Education and Learning (McREL) examined national and state standards documents and identified 200 standards and 3,093 benchmarks in 14 subject areas. They concluded that in order to teach all these standards and benchmarks, it would require 71 percent more instructional time than is currently available (Marzano & Haystead, 2008).

Implemented Curriculum

This aspect is related to the actual instruction delivered in the classroom. Once a curriculum is designed, its implementation can initially vary greatly between classrooms as educators interpret or apply the curricular concepts and instructional strategies differently in their classrooms. A key component of the instructional coaches' role is to ensure that educators are supported in teaching the curriculum in the way it was intended, using the most effective instructional strategies. This is done through coaching planning sessions, modeling, lesson study, and other collaborative inquiries.

Attained Curriculum

This aspect of the curriculum is centered on what students actually learn. As the intended curriculum is developed, curriculum coordinators are also working with classroom teachers to define what will be accepted as evidence that the students have learned the material. Assessments are then developed that are designed to gather this evidence.

FY 15 Budget Request for Curriculum Coordination and Coaching

Elementary Request:

Building	Number of Teachers/ Classrooms (requested in FY15 budget)	Number of curriculum and instruction support Staff*	
		Existing	Requested
Beal	14 classrooms (21 sections)	0.5	0.5
Coolidge	18 classrooms	0.5	1.0
Floral Street	32 classrooms	1.0	2.0
Paton	16 classrooms	0.5	1.0
Spring Street	17 classrooms	0.5	1.0
Parker Road	9 classrooms (22 sections)	0	0.5

*Note: These positions support every grade level and every content area in each early childhood and elementary building

Middle Level Request:

Content Area	Number of Teachers/ Classrooms (requested in FY15 budget)	Number of curriculum and instruction support Staff*	
		Existing	Requested
Science	30 classrooms	1.0	1.0
Social Studies	30 classrooms	0	1.0
ELA	30 classrooms	1.0	1.0
Math	30 classrooms	0	1.0

*Note: These positions also include supervisory responsibilities

What is the "Cost" of Not Adding These Positions?

The quality of our educators' performance is enhanced when they receive effective instructional coaching and curriculum support, and it is crucial to restore some of the positions that were lost in recent years in order to provide adequate support for our elementary and middle school teachers. Insufficient support compromises teachers' ability to successfully implement the curriculum and provide students with the learning experiences they need to reach academic benchmarks.

In the absence of strong curriculum and instruction support, clarity across classrooms regarding the key instructional goals for the grade level, department, or course is lost. In addition, implementation of the perceived goals varies widely between classrooms and the ability to assess students against a well defined set of worthwhile goals also becomes unattainable. A district without a system and structure in place to support curriculum and instruction develops a significant vulnerability towards having the type of instruction a student receives be primarily driven by who he/she gets for a teacher - *What you get depends on who you get.* In effect, students have different opportunities to learn across a grade level or course of study and there is limited capacity to build a coherent learning experience for students from one year to the next.